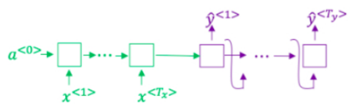
Congratulations! You passed!

Grade received 80% **Latest Submission Grade** 80% **To pass** 80% or higher

Go to next item

1. Consider using this encoder-decoder model for machine translation. **0 / 1 point**



True/False: This model is a “conditional language model” in the sense that the decoder portion (shown in green) is modeling the probability of the input sentence x.

- (selected) True
- False

Expand

Incorrect
The encoder-decoder model for machine translation models the probability of the output sentence y conditioned on the input sentence x. The encoder portion is shown in green, while the decoder portion is shown in purple.

2. In beam search, if you increase the beam width B, which of the following would you expect to be true? **1 / 1 point**

- Beam search will converge after fewer steps.
- Beam search will run more quickly.
- (selected) Beam search will generally find better solutions (i.e. do a better job maximizing $P(y \mid x)$).
- Beam search will use up less memory.

Expand

Correct
As the beam width increases, beam search runs more slowly, uses up more memory, and converges after more steps, but generally finds better solutions.

3. True/False: In machine translation, if we carry out beam search without using sentence normalization, the algorithm will tend to output overly long translations. **1 / 1 point**

- True
- (selected) False

Expand

Correct
In machine translation, if we carry out beam search without using sentence normalization, the algorithm will tend to output overly short translations.

4. Suppose you are building a speech recognition system, which uses an RNN model to map from audio clip x to a text transcript y. Your algorithm uses beam search to try to find the value of y that maximizes $P(y \mid x)$. **1 / 1 point**

On a dev set example, given an input audio clip, your algorithm outputs the transcript $\hat{y}$ = “I’m building an A Eye system in Silly con Valley.”, whereas a human gives a much superior transcript y^* = “I’m building an AI system in Silicon Valley.”

According to your model,

$P(\hat{y} \mid x) = 1.95 * 10^{-7}$

$P(y^* \mid x) = 3.42*10^{-9}$

True/False: Trying a different network architecture could help correct this example.

- ○ False
- ◉ True

Expand

Correct
$P(y^* \mid x) < P(\hat{y} \mid x)$ indicates the error should be attributed to the RNN rather than to the search algorithm. If the RNN model is at fault, then a deeper layer of analysis could help to figure out if you should add regularization, get more training data, or try a different network architecture.

5. Continuing the example from Q4, suppose you work on your algorithm for a few more weeks, and now find that for the vast majority of examples on which your algorithm makes a mistake, $P(y^* \mid x) > P(\hat{y} \mid x)$. This suggests you should focus your attention on improving the RNN.

1 / 1 point

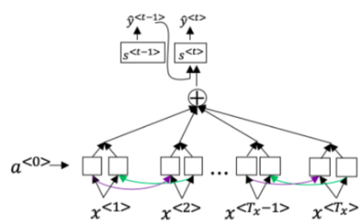
- ◉ False
- ○ True

Expand

Correct
$P(y^* \mid x) > P(\hat{y} \mid x)$ indicates the error should be attributed to the search algorithm rather than to the RNN.

6. Consider the attention model for machine translation.

0 / 1 point



Further, here is the formula for $\alpha^{<t,t'>}$.

$$\alpha^{<t,t'>} = \frac{\exp(e^{<t,t'>})}{\sum_{t'=1}^{T_x} \exp(e^{<t,t'>})}$$

Which of the following statements about $\alpha^{<t,t'>}$ are true? Check all that apply.

- ☐ $\alpha^{<t,t'>}$ is equal to the amount of attention $y^{<t>}$ should pay to $\alpha^{<t'>}$
- ☑ $\sum_{t'} \alpha^{<t,t'>} = 1$. **(Note the summation is over t'.)**

✓ **Correct**

Correct! If we sum over

$\alpha^{<t,t'>}$

$\alpha^{<t,t'>}$ for all t' (the formulation can be seen in the image), the numerator will be equal to the denominator, therefore,

$$\sum_{t'} \alpha^{<t,t'>} = 1$$

$\sum_{t'} \alpha^{<t,t'>} = 1$.

$a^{<t'>}$

that are highly relevant to the value the network should output for

$..^{<t'>}$

Expand

Incorrect
You didn't select all the correct answers

7. The network learns where to “pay attention” by learning the values $e^{<t,t'>}$, which are computed using a small neural network: **1 / 1 point**

We can replace $s^{<t-1>}$ with $s^{<t>}$ as an input to this neural network because $s^{<t>}$ is independent of $\alpha^{<t,t'>}$ and $e^{<t,t'>}$.

- True
- False

Expand

Correct
We can't replace $s^{<t-1>}$ with $s^{<t>}$ as an input to this neural network. This is because $s^{<t>}$ depends on $\alpha^{<t,t'>}$ which in turn depends on and $e^{<t,t'>}$; so at the time we need to evaluate this network, we haven't computed $s^{<t>}$.

8. Compared to the encoder-decoder model shown in Question 1 of this quiz (which does not use an attention mechanism), we expect the attention model to have the greatest advantage when: **1 / 1 point**

- The input sequence length T_x is large.
- The input sequence length T_x is small.

Expand

Correct

9. **1 / 1 point**

Under the CTC model, identical repeated characters not separated by the “blank” character (_) are collapsed. Under the CTC model, what does the following string collapse to?

kk_eee____ee_p__eeeeeeee_____rrrrr

- keeper
- ke epe r
- keper
- kkeeeeepeeeeeeeerrrrr

Expand

Correct
The basic rule for the CTC cost function is to collapse repeated characters not separated by "blank". If a character is repeated, but separated by a “blank”, it is included in the string.

10. In trigger word detection, if the target label for $x^{<t>}$ is 1: **1 / 1 point**

- There is exactly one trigger word.
- Only one word has been stated.
- The total time that the trigger word detection algorithm has been running is 1.
- Someone has just finished saying the trigger word at time <i>t</i>.

Expand

Correct
Target labels indicate whether or not a trigger word has been said.